

7 FEB 2000

09/485657

Express Mail Mailing Label No. EL485579266US

FORM PTO-1300 (REV 12-29-99)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER <b>FBR6132P0010US</b>
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U.S. APPLICATION NO. (if known, see 37 CFR 1.5) —
INTERNATIONAL APPLICATION NO. <b>PCT/AU98/00647</b>	INTERNATIONAL FILING DATE <b>14 August 1998 (14.08.98)</b>	PRIORITY DATE CLAIMED <b>15 August 1997 (15.08.97)</b>	
TITLE OF INVENTION <b>A DISTRIBUTED STEREO SYSTEM</b>			
APPLICANT(S) FOR DO/EO/US <b>Leonard Colin Andrews</b>			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).</li> <li>4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.</li> <li>5. <input type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))               <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> has been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li>7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))               <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> have been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</li> <li>10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>			
Items 11. to 16. below concern document(s) or information included:			
<ol style="list-style-type: none"> <li>11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</li> <li>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</li> <li>13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.  <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</li> <li>14. <input type="checkbox"/> A substitute specification.</li> <li>15. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>16. <input checked="" type="checkbox"/> Other items or information:  <p>A copy of International Publication No. WO 99/09787 is submitted herewith, along with a copy of the international search report. It is understood that International Publication No. WO 99/09787 incorporates a copy of International Application No. PCT/AU98/00647, as filed.</p> </li> </ol>			

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO. <b>PCT/AU98/00647</b>		ATTORNEY'S DOCKET NUMBER <b>FR6132P0010US</b>	
17. <input checked="" type="checkbox"/> The following fees are submitted: <b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :</b> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$970.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... \$840.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$690.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$670.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$96.00 <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>CALCULATIONS</b> PTO USE ONLY	
				\$ 970.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 130.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	56 - 20 =	36	X \$18.00	\$ 648.00	
Independent claims	- 3 =		X \$78.00	\$ - 0 -	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00	\$ 260.00	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$ 1,908.00	
Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).				\$ - 0 -	
<b>SUBTOTAL =</b>				\$ 1,908.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
<b>TOTAL NATIONAL FEE =</b>				\$	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$	
<b>TOTAL FEES ENCLOSED =</b>				\$ 1,908.00	
				Amount to be refunded:	\$
				charged:	\$
a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>1,908.00</u> to cover the above fees is enclosed.					
b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.					
c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>04-1644</u> . A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
<b>Allen J. Hoover</b> <b>Rockey, Milnamow &amp; Katz, Ltd.</b> <b>Two Pudential Plaza, Suite 4700</b> <b>180 North Stetson Avenue</b> <b>Chicago, Illinois 60601</b> <b>Telephone: (312) 616-5400</b> <b>Facsimile: (312) 616-5460</b>					
				SIGNATURE: <i>Allen J. Hoover</i>	
				NAME: <b>Allen J. Hoover</b>	
				REGISTRATION NUMBER: <b>24,103</b>	

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS**  
(37 C.F.R. 1.9(f) AND 1.27(c) - SMALL BUSINESS CONCERN)

Applicant/Patentee: Leonard Colin Andrews	Docket No.: FBR6132P0010US
Serial/Patent No.: PCT/AU98/00647	Filed/Issued: August 14, 1998
For: A DISTRIBUTED STEREO SYSTEM	

I hereby declare that I am:

- ☐ the owner of the small business concern identified below;  
☒ an official of the small business concern empowered to act on behalf of the concern identified below.

NAME OF CONCERN: LeisureTech Electronics Pty, Ltd.

ADDRESS OF CONCERN: Unit 7, 620 Botany Road

Alexandria, NSW 2015, AUSTRALIA

I hereby state that the above identified small business concern qualifies as a small business concern as defined in 13 CFR. Part 121, for purposes of paying reduced fees to the United States Patent and Trademark Office. Questions related to size standards for a small business concern may be directed to: Small Business Administration, Size Standards Staff, 409 Third Street, SW, Washington, D.C. 20416.

I hereby state that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

- ☐ the specification filed herewith as listed above.  
☒ the application identified above.  
☐ the patent identified above.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern, or organization having rights in the invention must file separate statements as to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization having any rights in the invention is listed below:

- ☒ no such person, concern, or organization exists.  
☐ each such person, concern, or organization is listed below.

Separate statements are required from each named person, concern or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b)).

NAME OF PERSON SIGNING: Leandrews. L. C. ANDREWS.

TITLE OF PERSON OTHER THAN OWNER: \_\_\_\_\_

ADDRESS OF PERSON SIGNING: PO. 7/620 BOTANY RD ALEXANDRIA

SIGNATURE: Leandrews.

DATE: 3-3-00

09/485657

416 Rec'd PCT/PTO 14 FEB 2000

Express Mail Mailing Label No. EL485579266US

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Leonard Colin Andrews  
Application No.: PCT/AU98/00647  
Int. Filing Date: 14 August 1998 (14.08.98)  
Attorney Docket No.: FBR6132P0010US  
Associate Docket No.: 89073

**FIRST PRELIMINARY AMENDMENT  
UPON ENTRY INTO NATIONAL STAGE**

Box PCT  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please amend claim 1, in its first line, by deleting "(or similar)".

Please amend each of claims 2 through 12, claim 13, in its second line, and each of claims 14 through 19, in its first line, by changing "where" to --wherein--.

Please further amend claim 5, in its first line, by changing "any preceding claims" to --claim 1, 2 or 3--.

Please further amend each of claims 7, 8, 9, and 13, in its first line, by changing "claims" to --claim--.

Please further amend claim 11, in its second line, by changing "and the" to --having a-- and, in its third line between "plate" and "includes", by inserting --that--.

Please add claims 20 through 25, as follows:

Application No. PCT/AU98/00647  
FIRST PRELIMINARY AMENDMENT  
UPON ENTRY INTO NATIONAL STAGE  
Page 2

20. A distributed stereo audio system according to claim 4, wherein the amplifier is based on an integrated circuit amplifier.

21. A distributed stereo audio system according to claim 20, wherein the amplifier is constructed to fit into a standard electrical light switch housing.


22. A distributed stereo audio system according to claim 11, wherein the signals are modulated before transmission to an infrared emitter which directly controls the audio components.

23. A distributed stereo audio system according to claim 22, wherein the amplifier accepts standard line level signals from the audio source components.

24. A distributed stereo audio system according to claim 12, wherein the signals are modulated before transmission to an infrared emitter which directly controls the audio components.

25. A distributed stereo audio system according to claim 24, wherein the amplifier accepts standard line level signals from the audio source components.

Respectfully submitted,

By   
Allen J. Hoover  
Reg. No. 24,103

Rockey, Milnamow & Katz, Ltd.  
Two Prudential Plaza, Suite 4700  
Chicago, Illinois 60601  
Telephone: (312) 616-5400  
Facsimile: (312) 616-5460  
February 11, 2000

"A DISTRIBUTED STEREO SYSTEM"

**Technical Field**

5 This invention concerns a distributed stereo audio system. Distributed stereo audio systems may be used to provide stereo sound to several rooms or areas from a single source of audio signals.

**Background Art**

10 A typical stereo audio system comprises several audio signal sources such as a CD player and a tuner. The source units are generally arranged in a stack together with a selector and amplifier unit. In use, a signal from a selected source is amplified and provided to speakers which are typically located some distance away from the unit within the same room. The system controls are manually operable switches and dials on the signal sources and  
15 amplifier. There is sometimes a hand-held control device which is used to transmit infrared signals to the selector and amplifier unit.

In sophisticated systems several sets of speakers may be mounted in different rooms throughout a house. Sometimes the selector and amplifier unit will be provided with switches to enable different sets of speakers to be  
20 activated and deactivated. To power multiple speakers from a single amplifier an impedance matching device is also required.

The amplifier's volume control, which controls the volume level in the main room, also controls the volume level of the speakers in remote rooms. The remote rooms may have an attenuator device to reduce volume level but  
25 this attenuator can only reduce the volume below the level set by the amplifier. The attenuator cannot increase the amplifier's output.

The quality of the components and the weight and quality of the cabling can easily affect the quality of the sound output by the speakers. These systems also require specialist knowledge in the installation of the  
30 cabling and the audio components.

**Summary of the Invention**

The invention is a distributed stereo audio system, including: two or more speakers for the broadcast of stereo audio signals; a source of stereo  
35 audio signals; a stereo amplifier to amplify stereo audio signals and drive the speakers; and a mains operated electrical power supply to provide power to

the amplifier. The amplifier is located in the same room as the speakers, and remote from the signal source and power supply. The amplifier is connected to the signal source and power supply by means of a category 5 four pair twisted cable which provides, in respective conductors of the twisted pairs, right channel audio signals from the signal source to the amplifier, left channel audio from the signal source to the amplifier, and DC power from the power supply to the amplifier.

The right channel audio, left channel audio and DC power may be provided in respective twisted pairs.

This system enables decentralisation of amplification, and permits the amplifier to be installed remote from the signal source and close to the speakers, reducing speaker cable loss and increasing total system damping factor. The remote amplifier does not need to be positioned close to a voltage source since it receives its power via the category 5 four pair twisted cable.

The cabling is very simple and easy to install. One CAT5, or similar, cable connects the source of audio signals, to each room or zone. This cable carries audio signal, system power, and if required, data and status. Digital systems can also carry video transmission. More of the cables can be laid in parallel if higher power or bi-amplification is required.

The cabling can be adapted to many different configurations. It is possible to install it into every major room in new homes. Once the cabling is installed the system can be configured in many different ways. It could start as a one-room system and be changed and upgraded to an audiophile standard multi-zone system feeding individual source selection to each room utilising the same cabling.

The cabling is capable of adapting to new technologies and system upgrades without the need to re-cable when upgrades are required; for instance, it can also be used to transmit digital audio, video and control commands.

Remote amplifier and speaker sets may be positioned in several rooms, and may receive signals from a single source of audio signals. Where the source provides a selection of components, such as radio or CD, it is also possible for different audio signals to be provided to different rooms. The volume may be set differently, up or down, in each room.

The remote amplifiers are integrated circuit amplifiers. As a result of not requiring built-in power supplies they may be compact, and they may be

constructed to fit into a standard electrical light switch housing or be incorporated into a speaker box or in-wall or in-ceiling speaker. A suitable example is the Silicon Monolithic, Bipolar Linear Integrated Circuit, TA8216H, dual audio power amplifier.

5       The remote amplifiers can be powered by low cost plug packs or by dedicated audiophile power supplies located at the audio source, where mains power is easily accessible.

      The remote amplifiers' output levels may be controlled by the output levels of the source components, or a manual volume control maybe included  
10       with respective remote amplifiers. Alternatively, a hand-held remote control may be provided for volume control, among other things. In this case, the remote control may transmit infrared signals to a receiver mounted with a remote amplifier. Where a remote amplifier is mounted inside a standard electrical light fitting the fascia plate may include an infrared receiver. The  
15       fascia plate may also include status indicators for the amplifier and the audio signal source components.

      Infrared signals received by a remote amplifier may be transmitted to the source components through a fourth twisted pair in the category 5 cable. The signals may be modulated before transmission to an infrared emitter  
20       which directly controls the audio components, or they may be demodulated and provided as data signals to those components.

      The system can also carry control data in the single cable to control other remote controllable items which are located in the same areas or those which can be incorporated into the single wiring system. Infrared is now a  
25       common data language. Many domestic appliances are controlled by infrared remote control. The remote infrared receivers may relay commands for all infrared devices operating between 38-500 kHz.

      The remote amplifiers may accept standard line level signals from the audio source components, or speaker outlet of a master amplifier which may  
30       be matched to the audio source, or sources, and may be located with them. In other words, the remote amplifiers may be driven by either a low impedance (4 to 16 ohm) speaker level signal, or high impedance (10k ohm) line level signal.

      The remote amplifiers may include a switchable muting system, and  
35       they may include an adjustable input level trim device.



A high input impedance at the remote amplifiers will cause any inducted line signals to be conducted back to the lower impedance of the audio source, reducing induced system noise at the amplifier. High impedance will also allow many remote amplifiers to be run from a single audio source with no sonic detriment. Multiple pairs of speakers may be driven from a single audio source in this way without the need for speaker impedance matching devices.

The output from the remote amplifiers is sufficient to drive a pair of hi-fi speakers, 4 to 16 ohm, at a reasonable sound level for most domestic requirements; typically 90-100dB unweighted. The remote amplifiers do not require fused output protection.

#### **Brief Description of the Drawing**

Examples of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a schematic diagram of a first example; and

Figure 2 is a schematic diagram of a second example.

#### **Best Modes for Carrying out the Invention**

Referring first to Figure 1, the distributed stereo audio system 1 comprises two speakers 2 and 3 connected to an amplifier 4. The amplifier 4 is housed in a standard electrical light switch housing in the same room as the speakers.

In another room, a source of audio signals 5 comprises a CD player 6, a tape recorder 7, a VCR 8 and a source selector 9. A power supply 10 provides power from the mains to each amplifier 4.

The amplifier 4 is connected to the signal source-and power supply 10 by means of a category 5 four pair twisted cable 11. One of the twisted pairs 12 provides the right audio signal from the source to amplifier 4. Another twisted pair 13 provides the left audio signal. A third twisted pair 14 provides power from power supply 10 to the amplifier 4.

In use amplifier 4 amplifies the left and right standard line level signals and supplies them to the speakers 2 and 3 respectively. The amplifier is controlled by operation of a potentiometer 15 mounted on its fascia plate 16.

Amplification may also be controlled by means of a hand-held remote controller 17 which transmits infrared signals 18 to a receiver 19 mounted in fascia plate 16. The fascia plate may include displays indicating the status of the amplifier and, if required, the components of the source. The fascia plate  
5 may also be used as a key-pad to transmit control commands to the sources.

Infrared signals may be transmitted, either before or after demodulation, from amplifier 4 back to source 5 using the fourth twisted pair 20 in category 5 cable 11. The infrared signals may be used to control the source directly. Alternatively, they may be used to retransmit the control  
10 signals using transmitter 21 to an infrared receiver 22 associated with the source.

Amplifier 4 is designed around a single chip amplifier, and has high input impedance. This enables several amplifiers to be mounted in different rooms to amplify signals from the same source 5 for speaker sets in each of  
15 those rooms. the Silicon Monolithic, Bipolar Linear Integrated Circuit, TA8216H, dual audio power amplifier is used for this purpose.

In each room the sound broadcast may be from the same component of the source, or from different components of the source. Further the amplification level may be different in each room.

Referring now to Figure 2, a slightly more complicated system will be described. In this system a connecting block 23 is used to interconnect the source of audio signals 5, the power supply 10, several category 5 four pair twisted cables 11 (two of which are shown), and the infrared emitter 21. The source selector 9 provides audio input, at line or speaker level, to the block  
20 23 along lines 24. The block then outputs these signals to respective twisted pairs of the category 5 cables 11, together with electrical power. One of the category 5 cables is connected as before, but the other terminates in an amplifier 25 mounted with one of a pair of ceiling mounted speakers 26 and 27 in another room. This amplifier module may be equipped with an  
25 infrared receiver 19 in its fascia plate, and control signals may be transmitted back to base as before.

Although the invention has been described with reference to a particular example, it should be appreciated that it may be exemplified in different forms. For instance, the source audio signal can come from a main  
35 amplifier or any line level output or amplifier speaker output. It can even have its own input switching or work in parallel with line level outputs

connected to an amplifier. A line driver of some kind may be used but it is not necessarily required. No impedance matching devices are required. For more sophisticated systems each remote amplifier may have its own source selection but this is not necessarily required.

5        During construction of a new building a facility for stereo broadcast can be economically installed into every major room. A four pair twisted cable (CAT5 or equivalent) is laid from a common control point to a point in each room where a remote amplifier may be installed. A loop wiring system may be used, however, this is not preferred since it may restrict the system's  
10 flexibility and power capability. Short lengths of speaker cable may be installed to speaker points in the walls or ceilings or wired directly to the speaker terminals. Using this cabling it is possible to install a remote amplifier into any room as and when required. More sophisticated multi-zone systems can be installed using the same cabling system.

15        Wiring at each end of the cable is a simple 8 way colour encoded connection. (It can also be a standard plug connector). No consideration has to be given to impedance matching, multiple modules can be run from the main system amplifier or a dedicated input selector or a single source component, eg. a CD player via line level. The volume level is infinitely  
20 variable and the main systems volume level does not affect the speakers in remote rooms. No remote mains power source is required.

A connecting block may be provided to interconnect the power supply, audio signal sources, main amplifier, infrared emitter to control the local sources and the remote amplifier and speaker sets. A four pair twisted  
25 (CAT5) cable is used to connect the connecting block with every remote amplifier.

In the Underwriters Labs (UL) Level classification system, there are 5 levels of increasing quality cabling.

30        In work paralleling UL's efforts, the American National Standards Institute's (ANSI) Electronic Industry Association/Telecommunication Industry Association (EIA/TIA) has developed similar standards to rate UTP.

The UL system harmonised with the EIA/TIA category system, and UL categories 3-5 now correspond exactly to EIA/TIA 568A categories.

35        EIA/TIA 568A incorporates all of the relevant areas of 568, TSB-36, TSB-40A, and TSB-53. The standard covers 100 ohm UTP, 150 ohm STP, and

fibre optic cabling. The EIA/TIA category rating system identifies categories 3, 4 and 5 for data applications.

5 Category 5 applies to UTP cables and associated connecting hardware with transmission characteristics up to 100mhz. Its application is ATM over copper TP-PMD 100Base-X.

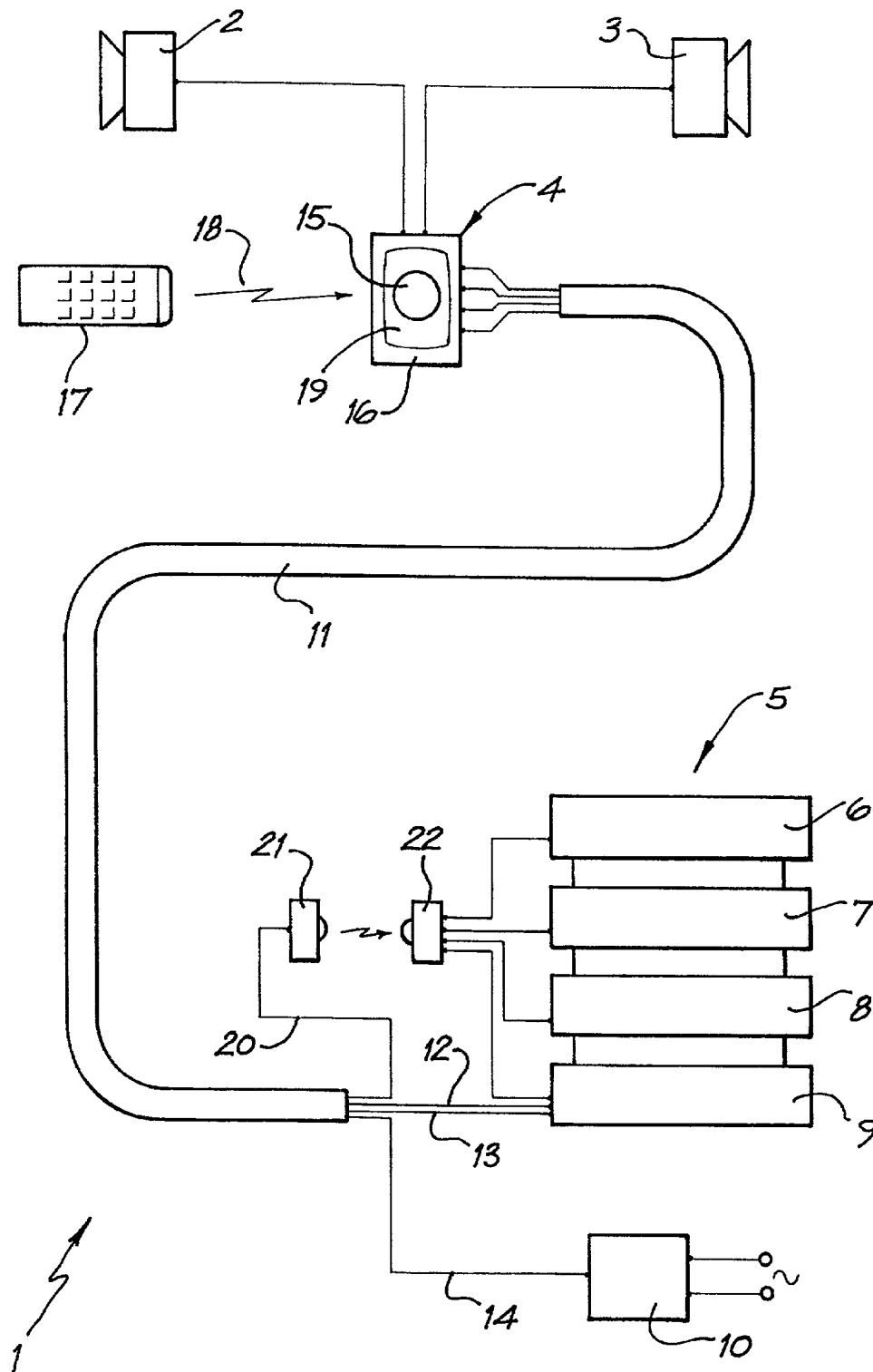
Most field test equipment verify category 5 conformance by checking the link's performance against EIA/TIA 568A Annex E requirements.

10 It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

**CLAIMS:**

1. A distributed stereo audio system, including: two or more speakers for the broadcast of stereo audio signals, a source of stereo audio signals, a stereo amplifier to amplify stereo audio signals and drive the speakers, and a mains  
5 operated electrical power supply to provide power to the amplifier; where the amplifier is located in the same room as the speakers, and remote from the signal source and power supply; and where the amplifier is connected to the signal source and power supply by means of a category 5 four pair twisted cable (or similar) which provides, in respective conductors of the twisted  
10 pairs, right channel audio signals from the signal source to the amplifier, left channel audio from the signal source to the amplifier and DC power from the power supply to the amplifier.
2. A distributed stereo audio system according to claim 1, where  
15 amplifier and speaker sets in several rooms receive signals from a single source of audio signals.
3. A distributed stereo audio system according to claim 1, where the source provides a selection of components, such as radio or CD, and different audio signals are provided to different rooms.
4. A distributed stereo audio system according to claims 1, 2 or 3, where  
20 the volume is set differently in each room.
5. A distributed stereo audio system according to any preceding claims, where the amplifier is based on an integrated circuit amplifier.
6. A distributed stereo audio system according to claim 5, where the  
25 amplifier is constructed to fit into a standard electrical light switch housing.
7. A distributed stereo audio system according to claims 1, 2 or 3, where the amplifier output level is controlled by the output level of the source components.
8. A distributed stereo audio system according to claims 1, 2 or 3, where a  
30 manual volume control is included with the amplifier.
9. A distributed stereo audio system according to claims 1, 2 or 3, where a hand-held remote control is provided to transmit infrared signals to a receiver mounted with the amplifier.
10. A distributed stereo audio system according to claim 9, where the amplifier is mounted with a speaker.

11. A distributed stereo audio system according to claim 9, where the amplifier is mounted inside a standard electrical light fitting and the fascia plate includes an infrared receiver.
12. A distributed stereo audio system according to claim 11, where the  
5 fascia plate also includes status indicators for the amplifier and the audio signal source components.
13. A distributed stereo audio system according to claims 9, 11 or 12, where infrared signals received by the amplifier are transmitted to the source components through a fourth twisted pair in the category 5 cable.
- 10 14. A distributed stereo audio system according to claim 13, where the signals are modulated before transmission to an infrared emitter which directly controls the audio components.
- 15 15. A distributed stereo audio system according to claim 13, where the signals are demodulated and provided as data signals to the audio components.
16. A distributed stereo audio system according to claim 1, where the amplifier accepts standard line level signals from the audio source components.
17. A distributed stereo audio system according to claim 1, where the  
20 amplifier accepts speaker signals from another amplifier.
18. A distributed stereo audio system according to claim 1, where the amplifier includes a switchable muting system.
19. A distributed stereo audio system according to claim 1, where the amplifier includes an adjustable input level trim device.



**FIG. 1**  
SUBSTITUTE SHEET (Rule 26)

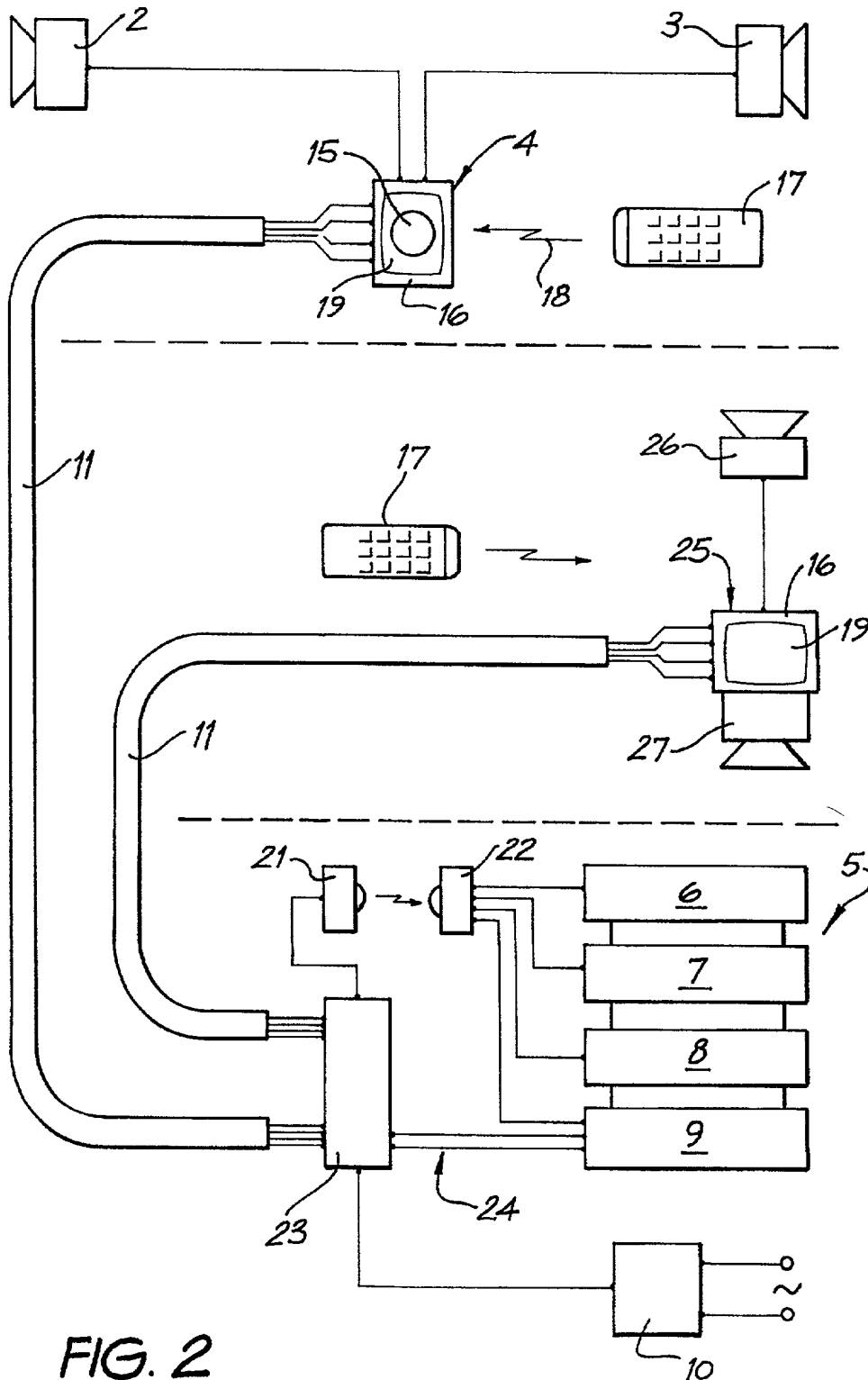


FIG. 2



<p align="center"><b>DECLARATION FOR UTILITY OR- DESIGN PATENT APPLICATION</b> (37 CFR 1.63)</p> <p><input type="checkbox"/> Declaration Submitted With Initial Filing      <input checked="" type="checkbox"/> Declaration Submitted After Initial Filing (surcharge (37 CFR 1.16(a)) required)</p>		Attorney Docket No.:	FBR6132P0010US
		First Named Inventor:	Leonard Colin Andrews
		<i>COMPLETE IF KNOWN</i>	
		Application Number:	PCT/AU98/00647
		International Filing Date:	14 August 1998
		Group Art Unit:	--
		Examiner Name:	--

As a below-named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed) or an original, first, and joint inventor (if plural names are listed) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **A DISTRIBUTED STEREO SYSTEM**, the specification of which:

- ☐ is attached hereto; or
- ☒ was filed on 14 August 1998 (International filing date)  
as International Application No. PCT/AU98/00647  
and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information to the Patent and Trademark Office known to me to be material to patentability of this application, as defined in 37 CFR. 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Numbers	Country	Foreign Filing Date	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
PO 8621	AU	15 August 1997	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- ☐ Additional foreign application numbers are listed on a supplemental priority data sheet (PTO/SB/02B) attached hereto.

I hereby claim the benefit under 35 U.S.C. 119 (e) of any United States application(s) listed below.

Application Number(s)	Filing Date	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet (PTO/SB/02B) attached hereto.

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT International application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date	Parent Patent Number (if applicable)

☐ Additional U.S. or PCT International application numbers are listed on a supplemental priority data sheet (PTO/SB/02B) attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Lawrence J. Chapa	Reg. No. <u>39,135</u>	Paul M. Odell	Reg. No. <u>28,332</u>
Randall T. Erickson	Reg. No. <u>33,872</u>	Robert B. Polit	Reg. No. <u>33,993</u>
Stephen D. Geimer	Reg. No. <u>28,846</u>	Elaine M. Ramesh	Reg. No. <u>43,032</u>
Allen J. Hoover	Reg. No. <u>24,103</u>	Keith V. Rockey	Reg. No. <u>24,713</u>
Martin L. Katz	Reg. No. <u>25,011</u>	John F. Rollins	Reg. No. <u>38,013</u>
Kathleen A. Lyons	Reg. No. <u>31,852</u>	Thomas I. Ross	Reg. No. <u>29,275</u>
John P. Milnamow	Reg. No. <u>20,635</u>	Joel E. Siegel	Reg. No. <u>25,440</u>
Lisa V. Mueller	Reg. No. <u>38,978</u>	Paul M. Vargo	Reg. No. <u>29,116</u>

whose mailing address for this application is: ROCKEY, MILNAMOW & KATZ, LTD.  
Two Prudential Plaza - Suite 4700  
180 North Stetson Avenue  
Chicago, Illinois 60601  
Telephone: (312) 616-5400  
Facsimile: (312) 616-5460

I hereby declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:	Leonard Colin Andrews	
Citizenship:	Unit 7, 620 Botany Road	
Residence:	Alexandria, <u>New South Wales 2015</u> , AUSTRALIA <i>Aut</i>	
Post Office Address (if different):	Same	
Signature:	<i>Leonard Andrews.</i>	Date: <i>3-3-00</i>